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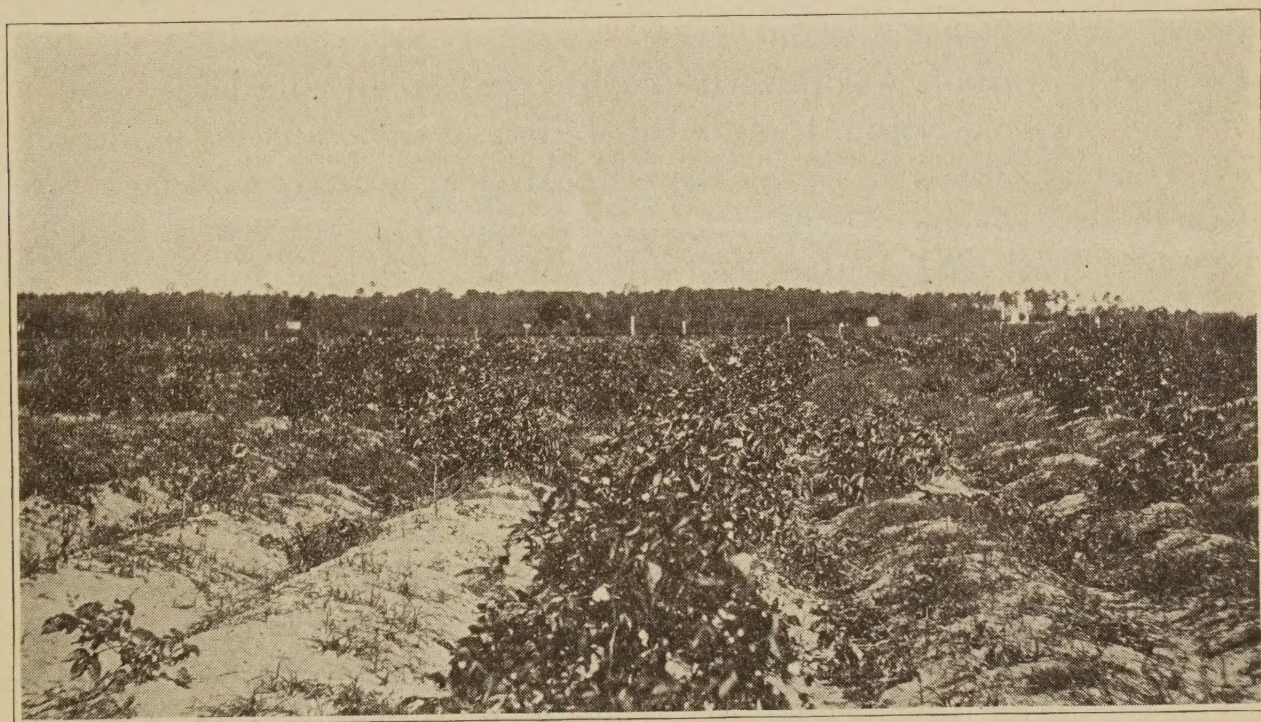
BUREAU OF PLANT INDUSTRY,
Seed and Plant Introduction and Distribution,
WASHINGTON, D. C.

RIVERS SEA ISLAND COTTON.

(A variety resistant to the wilt disease or "Black-root.")

HISTORY OF THE VARIETY.

This variety, the seeds of which are now distributed for the first time, was originated in connection with the investigations of the U. S. Department of Agriculture on the cotton wilt, a disease which has



Row of Rivers Sea Island cotton in wilt infected field planted with rows of ordinary Sea Island cotton.

done great damage in the South. All other methods of treatment having failed, an effort was made to produce a resistant variety. This was based on the observation that some plants remained healthy, even in the worst infected places, and it was thought that the seed from such stalks might produce other resistant plants. This was found to be the case, and several strains have been produced in this way by saving seed from healthy plants in the worst diseased areas. The seed of the best of these resistant strains is distributed with this circular, the seed having been grown by special arrangement expressly for the Department

of Agriculture. Other selections made by the Department or under its direction are also being grown and tested, and will be used for future distribution.

The Rivers cotton was originated in cooperation with the Department of Agriculture by Mr. E. L. Rivers, James Island, S. C., who in 1899 saved the seed of a single plant which had survived the disease, while all surrounding plants had been killed. This seed Mr. Rivers planted in a single row in a badly-infected area. The result is shown in the accompanying illustration. In the resistant row not a single plant died, while the adjoining rows planted with ordinary seed were almost totally destroyed.

Sufficient seed was obtained from this row to plant an acre the next year (1901). This land was also infected with the cotton wilt, but only two or three plants became affected, showing the great resistance of the new variety. In 1902, fifteen acres were planted. This land was badly infected with wilt and previous crops had been nearly destroyed in portions of the field, so that the land had been abandoned for cotton. The Rivers cotton proved as resistant here as in the previous years. An occasional plant became diseased and was pulled up, but the field as a whole was perfectly healthy and produced a large crop.

These three successful trials of this variety, corroborated by numerous experiments carried on by the Department of Agriculture with both Sea Island and Upland cotton, and by the experience of several cotton planters, demonstrate that the wilt can be overcome by the use of resistant varieties, and this seed is distributed this year in Georgia and Florida to enable the farmers to test its merits and grow for themselves a stock of seed for future planting.

DESCRIPTION OF COTTON WILT.

The especial feature of this variety is its resistance to the wilt, and since some who receive the seed may not be familiar with that disease, a brief description of it is included here. For more detailed information write to the Department of Agriculture at Washington for Bulletins 17 and 27 of the Division of Vegetable Physiology and Pathology.

The Wilt Disease is also known as "Blight" and "Black-root." It is injurious to Sea Island cotton on the Sea Islands of South Carolina, and in Southern Georgia and in Florida, and to Upland cotton over wide areas in several States. It is worst on sandy soils, where it persists year after year. Prominent symptoms are the wilting of the plants, which are dwarfed or killed, the brown discoloration of the inner wood of stem and root, and a tufting of the small rootlets.

The wilt is caused by a parasitic fungus in the soil, which enters the roots and grows upward through the water-carrying vessels of the stems, which it clogs. It is aggravated by continuous cropping in cotton, but can not be remedied by rest or rotation, since the fungus can live in

the soil for an indefinite time after it has once obtained a foothold. It is not due to the poverty of the land nor to the use of commercial fertilizers, and can not, so far as known, be cured by adding any fertilizer or other substance to the soil.

CONTROL OF THE WILT.

The only remedy known is the use of resistant varieties. When land is badly affected by wilt and seed of resistant cotton can not be had, some other crop than cotton should be planted.

In all cases, even where the disease does not occur or where a resistant variety is available, a rotation of crops is to be recommended, such as corn with cowpeas or peanuts; second, velvet beans; third, cotton; or, first, corn with cowpeas or peanuts; second, oats followed by cowpeas; third, cotton.

DIRECTIONS FOR PLANTING.

In order to fully test the resistant qualities of the variety, this seed should, if possible, be planted on land where cotton has in previous years suffered badly from wilt (black-root). Do not plant Upland cotton near the Sea Island. Much of the "running out" of the long staple cotton in south Georgia is due to accidental hybridization with neighboring fields of short staple cotton. Since only a small quantity of seed can be had, unusual care ought to be taken in planting to make the seed go as far as possible. The land should be well fertilized and cared for in order to produce a large crop of seed. The Rivers cotton is resistant to wilt, but not necessarily so to rust and other troubles due to poor soil. To secure the best results, therefore, plant the seed on good soil and use from 400 to 600 pounds per acre of commercial fertilizer or its equivalent in stable manure or compost.

In land of ordinary fertility plant in rows 4 feet apart, with the plants 18 inches apart in the row. In rich soil make the rows 5 feet apart, with 20 to 22 inches between the plants. The Rivers cotton is a low, compact variety and can be planted closer than the average Georgia Sea Island cotton. To economize seed in planting, drop by hand 3 to 5 seed in a hill, cover lightly, and thin out to one in a place.

In order to give an exact report at the end of the season, the field where this seed is planted should be measured and the yield determined by actual weighing when the crop is picked.

PICKING.

In picking Sea Island cotton much more care should be taken than is necessary with the Upland cotton. Pick often to avoid injury by the weather. Sun the cotton on a low arbor after picking to dry it, and sort out all trash, yellow, and immature cotton, etc., before ginning, as all these impurities injure the sale of the lint. The high prices

obtained for the best grades of Sea Island cotton are due in part to the extreme care taken to remove all trash before marketing.

If your trial of this variety results satisfactorily, save all the seed carefully, as it will be difficult to get more from any source. Gin the cotton separately and clean the gins to avoid mixture with inferior varieties.

CHARACTERS OF THE RIVERS COTTON.

Plant resistant to wilt, vigorous, compact, pyramidal, branching near the base; limbs small, close-jointed, bearing heavily; bolls medium size, 3 to 4 lobed; seed small, black, well covered; lint 28 per cent; staple 2 inches long, cream-white, fully to extra fine. Time of maturing, early.

CONTINUAL SELECTION NECESSARY TO MAINTAIN QUALITY.

The qualities of resistance, bearing, etc., characteristic of this cotton, will be found to be thoroughly fixed in the seed distributed. It can not be expected that they will be maintained indefinitely, however, unless careful annual selection of seed is practiced. Though the variety is highly resistant to wilt, there will be occasional individuals reverting to the original type and becoming attacked by the disease. All such should be weeded out and destroyed.

The following method of selection is recommended for keeping up the quality of the variety:

1. *To obtain seed for the main crop.*—Pull up and destroy all diseased or inferior plants and all hybrid or barren stalks, saving seed only from good plants in the general field.

2. *To secure an improved stock for future planting.*—Select from the general field a few plants of the greatest excellence, marking them with a cloth. Leave these unpicked till the middle of the season, then compare them critically with reference to bearing, length, and quality of staple, resistance to wilt, etc., and *choose from this number a single plant which combines the most desirable qualities.* Save all the seed carefully and plant separate from the main crop the next year, one seed in a hill, to secure as great a yield as possible. This cotton planted by itself each time will give sufficient seed the third year to plant the whole crop. This selection should be carried out every year. The propagation from single plants insures a uniformity that can be secured in no other way.

This is the method practiced in the Sea Islands, and if it were done in Georgia and Florida there would be less trouble with the "running out" of the cotton.

W. A. Orton,
Assistant Pathologist.

Approved:

A. F. Woods,

Pathologist and Physiologist.

REPORT RESULTS.

Special attention is called to the fact that this is a new variety of great value, and that it can not be bought in the market at any price. For this reason farmers receiving this seed should plant it with care and save the seed.

It is desired to know the results of all trials of the Rivers cotton, and every farmer who receives seed is requested to return the accompanying card with his name and address, signifying his willingness to report at the end of the season. Blanks will then be sent out to be filled and returned. The Department wishes to continue the work of originating and distributing wilt-resistant varieties adapted to the requirements of the various cotton-producing sections, and the active cooperation of farmers will be of great assistance.

A. J. PIETERS,
Botanist in Charge.

Approved:

B. T. GALLOWAY,
Chief of Bureau.

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